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(54) Title: DEVICE FOR MANUFACTURING CUSHIONS FILLED WITH A MEDIUM, SERIES OF CUSHIONS AND CUSHION MANUFACTURED BY SUCH A DEVICE, AND TUBULAR FOIL

(57) Abstract: Device for manufacturing cushions filled with a medium from synthetic pre-processed tubular foil. Flexible pre-processed tubular foil is supplied to the device by a supply device in a supply direction. The pre-processed tubular foil is supplied in flat condition. The pre-processed tubular foil has a first and a second longitudinal edge opposite each other. An introduction means for introducing a medium is provided. A cutting means is present for making a cut in the pre-processed tubular foil only and at least near the first longitudinal edge of the foil. The introduction means is elongated and insertable in the pre-processed tubular foil through the cut made by the cutting means for abutment of the introduction means against the part of the first longitudinal edge that is not yet cut. Sealing means are provided for sealing the pre-processed tubular foil parallel and between the introduction means and the second longitudinal edge, for sealing off the cut. Series of cushions or cushion filled with a medium manufactured by a device according to the invention. Seen in cross-section each cushion comprises a second closed off longitudinal edge, a first cut-through longitudinal edge formed by two ends situated opposite it, and a longitudinal seal situated between the first and the second longitudinal edge. Pre-processed tubular foil provided with a first and second longitudinal edge opposite each other and spaced apart transverse seals, in which each transverse seal extends from the second longitudinal edge up to a distance from the first longitudinal edge.

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Device for manufacturing cushions filled with a medium, series of cushions and cushion manufactured by such a device, and tubular foil.

The present invention relates to a device for manufacturing cushions filled with a medium from synthetic tubular foil. The medium may be a gaseous medium, but also another medium such as for instance a liquid or a powder.

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International patent application WO94/07678 describes such a device for manufacturing small air-filled cushions or bags, for use as protective filling material when packaging fragile parts and other objects in cargo boxes or the like. The cushions are made by forming a transverse seal across the tubular foil, introducing air into the foil by inserting a needle through the wall of the tubular foil, and subsequently forming another transverse seal across the tubular foil where the air was introduced to close off the cushion and to seal off the hole made by the needle. Consecutive cushions leave the device as either a number of cushions connected to each other, or they can be separated in order to be used separately. Said known device and other alternative known devices amongst others need separate means for centering the tubular foil in the device in order to correctly carry out the treatments on it, and a relatively large number of parts, such as for instance sealing means. Such separate centering devices and parts not only render the device more expensive, but also more sizeable.

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It is amongst others an object of the present invention to provide a device for manufacturing a cushion filled with a medium, with which the tubular foil can be positioned in the device and filled with the medium in a simple manner, which device has a very compact construction, and comprises few parts.

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To that end the present invention provides a device for manufacturing cushions filled with a medium from synthetic pre-processed tubular foil, to which device flexible pre-processed tubular foil is supplied in a supply direction, in which the flexible pre-processed tubular foil is supplied in flat condition, in which the pre-processes tubular foil has a first and a second longitudinal edge opposite each other, said device being provided with introduction means for introducing a medium, with cutting means for making a cut in the pre-processed tubular foil only and at least near the first longitudinal edge of the foil, the introduction means being elongated and insertable in the pre-processed tubular foil through the cut made by the cutting means for abutment of the introduction means against the part of the first longitudinal edge that is not yet cut, and with sealing means for sealing the pre-processed tubular foil in longitudinal direction and between the introduction means and the second longitudinal edge for sealing off the cut made by the cutting means. As a result the introduction means for the medium is also used as means for positioning the pre-processed tubular foil in the device. Moreover, merely one introduction means and one sealing means are necessary for sealing the cut in longitudinal direction, as a result of which the device can be designed compact and economical.

In a preferred embodiment of a device according to the invention the pre-processed tubular foil is provided with spaced apart transverse seals, each transverse seal extending from the second longitudinal edge up to a distance from the first longitudinal edge. Thus the device does not need to comprise transverse sealing means for making a transverse seal, and can be designed very compact and economical.

Preferably the introduction means are formed by a tube having at least one opening, for instance a slit or holes, for introducing the medium into the pre-processed tubular foil, which opening preferably faces away from the first longitudinal edge. As a result the air is blown in from the first longitudinal edge towards the second longitudinal edge.

Preferably the tube is positioned for extending in upstream direction, past the first longitudinal edge within the tubular foil. When discharging the air or gas the first longitudinal edge is pulled against the tube.

- 5 Preferably the device according to the invention comprises means for pulling the first longitudinal edge taut, so that folds or creases in the tubular foil at the location of the sealing means are prevented and as a result leaks in the bags are prevented.
- 10 Pulling taut can take place in a very simple manner when the means for pulling the first longitudinal edge taut are adapted for setting the tubular foil at an obtuse angle in the area immediately upstream of the sealing means. The first longitudinal edge is situated at the outside of the angle, and has to traverse a longer track than the second longitudinal edge. The
- 15 second longitudinal edge will form creases, which promotes the filling process.

- The means for pulling the first longitudinal edge taut may also comprise a supply roll or holder shaft for it that is positioned oblique with respect to
- 20 the transport direction of the tubular foil and at the location of the sealing means, so that the tube of foil is supplied in an already oblique position.

- In an advantageous manner the tube can be a part of the means for pulling the first longitudinal edge taut and said tube comprises two portions that
- 25 are at an obtuse angle to each other. The tube thus forms a guidance for the first longitudinal edge in the "outer curve", in which the tubular foil remains positioned against the tube during setting because of the air that comes out of the tube opening(s).

- 30 The obtuse angle preferably is approximately 175 degrees, and can be realised by curving the tube and may then be gradual, though in view of ease of manufacturing a buckle shape may be used.

The introduction of air into the tubular foil is improved when the tube, in a downstream portion of the obtuse angle, is provided with the discharge opening(s), so that the introduction of air is improved.

- 5 The cutting means can be positioned at the location of the upstream end of the sealing means.

Alternatively the cutting means can be positioned at a distance downstream of the upstream end of the sealing means.

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- In a further preferred embodiment of a device according to the invention the pre-processed tubular foil is provided with repetitive series of a number of consecutive and spaced apart transverse seals, in which each transverse seal extends from the second longitudinal edge up to a distance from the first longitudinal edge, in which at a distance from a last transverse seal of the series a triplet is situated of consecutively and spaced apart from each other a transverse seal, a row of perforations, which row extends from the first to the second longitudinal edge, and a transverse seal, the distance between a transverse seal and the row of perforations of the triplet being smaller than the distance between the neighbouring transverse seals of the number of transverse seals. Thus the device does need not to comprise transverse sealing means for making a transverse seal and perforation means for making a row of perforations, along which the cushions can be separated, and can be designed very compact and economical.

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- The present invention further relates to a series of cushions filled with a medium manufactured by a device according to the invention from synthetic pre-processed tubular foil, in which seen in cross-section each cushion comprises: a second closed off longitudinal edge, a first cut-through longitudinal edge formed by two ends situated opposite it, and a longitudinal seal situated between the first and the second longitudinal edge, the medium being situated between the longitudinal seal and the

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second longitudinal edge. Such a series has been made in a cheap manner, so that the series in itself is also cheaper.

5 The present invention further relates to a cushion filled with a medium manufactured by a device according to invention, in which seen in cross-section each cushion comprises: a second closed off longitudinal edge, a first cut-through longitudinal edge formed by two ends situated opposite it, and a longitudinal seal situated between the first and the second longitudinal edge, the medium being situated between the longitudinal seal
10 and the second longitudinal edge. Such a cushion is cheap, and appears to have sufficient quality.

The present invention further relates to a pre-processed tubular foil provided with a first and second longitudinal edge opposite each other and
15 spaced apart transverse seals, in which each transverse seal extends from the second longitudinal edge up to a distance from the first longitudinal edge. Using such a pre-processed tubular foil makes it possible that a device according to the present invention does not need to comprise transverse sealing means, and can thus be designed economical and with
20 few parts.

The present invention further relates to a pre-processed tubular foil provided with a first and a second longitudinal edge opposite each other and repetitive series of a number of consecutive and spaced apart
25 transverse seals, in which each transverse seal extends from the second longitudinal edge up to a distance from the first longitudinal edge, in which at a distance from a last transverse seal of the series a triplet is situated of consecutively and spaced apart from each other a transverse seal, a row of perforations, which row extends from the first to the second longitudinal
30 edge, and a transverse seal, the distance between a transverse seal and the row of perforations of the triplet being smaller than the distance between the neighbouring transverse seals of the number of transverse

seals. Using such a pre-processed tubular foil makes it possible that a device according to the present invention does not need to comprise transverse sealing means and no means for making a row of perforations, and thus can be designed economical and with few parts.

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Further embodiments and advantages of a device for manufacturing cushions filled with a medium, a series of cushions and a cushion, and a pre-processed tubular foil according to the invention will clearly appear from the description given below of some exemplary embodiments of the invention, which should be considered as illustrations only and not as limiting. In the drawings:

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Figure 1 schematically shows a view of a device according to the invention;

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Figure 2 schematically shows a view transverse to the view of figure 1 of a device according to the invention;

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Figure 3 schematically shows a cross-section of the cushion according to the present invention;

Figure 4 shows a perspective view of a series of cushions according to the invention;

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Figure 5 schematically shows an example of a pre-processed tubular foil to be supplied to a device according to the invention;

Figure 6 schematically shows an example of an alternative pre-processed tubular foil to be supplied to a device according to the invention;

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Figure 7 schematically shows an example of a further alternative pre-processed tubular foil to be supplied to a device according to the invention;

Figures 8A and 8B, respectively, show a view on a preferred embodiment of a device according to the invention and schematically show the build-up of a part thereof;

5 Figure 9A and 9B show schematic top views on the device of the figures 8A and 8B, in which some parts at the location of the sealing station have been left out for the sake of clarity.

Figure 10 shows a view according to arrow X in figure 9A; and

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Figure 11 shows a view according to arrow XI in figure 9B.

The present invention will be described below on the basis of air as medium. However, it will be clear that also cushions or bags can be filled
15 with another gaseous medium such as nitrogen, oxygen, helium or the like, or with a non-gaseous medium such as a liquid or a powder.

In figures 1 and 2 an exemplary embodiment of a device for manufacturing air-filled cushions according to the invention is schematically shown in side
20 view and top view, respectively, or vice-versa. The device preferably is provided with a carrier 1 for carrying a roll of pre-processed tubular foil 2. However, it is also possible that the pre-processed tubular foil 2 is supplied by a separate supply device which is not a part of the device according to the invention.

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The device is provided with two drive rollers 3, 4 between which the pre-processed tubular foil 2 can be passed. The two drive rollers 3, 4 preferably are springmounted with respect to each other, and press against
30 2. By rotation of the drive rollers 3, 4 the pre-processed tubular foil 2 is pulled from the carrier 1, so that the pre-processed tubular foil 2 is transported in a supply direction 5 through the device. To that end the

drive rollers 3, 4 are provided at their surfaces with a material of a sufficiently high friction coefficient in a known manner. It will be clear that the invention is not limited to this way of passing the pre-processed tubular foil through the device, but that other passage devices can also be used.

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The flexible pre-processed tubular foil 2 is supplied to the device in flat condition. The pre-processed tubular foil 2 thus has a first longitudinal edge 6 and a second longitudinal edge 7 opposite each other.

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The device is further provided with a cutting means 8 for making a cut in the pre-processed tubular foil 2 (figure 2) only and at least near the first longitudinal edge 6 of the pre-processed tubular foil 2.

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The device is also provided with an introduction means 9 for introducing air, or another medium, into the pre-processed tubular foil 2. The introduction means 9 is elongated. Preferably the introduction means 9 is formed by a tube having a slit 10 for introducing the medium into the pre-processed tubular foil 2. In a manner known per se, the tube 9 is connected to a supply of medium, for instance a ventilating fan or the like.

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Alternatively a number of medium introduction openings placed adjacent to each other can be provided. Instead of a slit, holes or other kinds of openings can be used as well.

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The tube 9 can be inserted in the pre-processed foil 2 through the front side at the beginning of the pre-processed tubular foil, or through the cut made by the cutting means 8. In this way does the tube 9 not only ensure the introduction of a medium in the pre-processed tubular foil 2, but also the positioning of the pre-processed tubular foil 2 in the device.

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Although at first sight it seems illogical to take a pre-processed tubular foil as starting point which is cut in longitudinal direction in order to form two ends at one longitudinal edge, and not to use a centrefold foil which

already has such a shape and is cheaper than pre-processed tubular foil, a cheaper final product is nonetheless obtained because the introduction means 9 is also used as positioning means for the pre-processed tubular foil 2 in the device. Furthermore only one sealing means is necessary for sealing the cut made, in longitudinal direction. As a result the device becomes cheaper, and thus the final product.

Sealing means 11, 12 (figure 1) are present for sealing the pre-processed tubular foil 2 in longitudinal direction and between the tube 9 and the second longitudinal edge 7. For instance the sealing means are formed by a circumferential heated teflon band 11, and a pressing means 12 situated opposite it. Of course other sealing means for making the longitudinal seal can also be used. Making a seal in a synthetic foil generally takes place by means of sealing with the help of heat.

Preferably pre-processed tubular foil 52 is used in which spaced apart transverse seals 53a, 53b, have already been made. The transverse seals extend from the second longitudinal edge 57 up to a distance from the first longitudinal edge 56, as shown in figure 5. By using such a pre-processed foil 52 the device itself does not need to comprise means for making transverse seals, so that the device can be designed compact and economical. As will be clear the transverse seals bound the cushion filled with a medium.

An advantageous alternative pre-processed tubular foil 62 comprises repetitive series of a number and spaced apart transverse seals 63a, 63b, 63c and 63d ... The transverse seals here extend from the second longitudinal edge 67 up to a distance from the first longitudinal edge 66. The series is completed by a triplet of a transverse seal 68, a transverse row of perforations 64a, and a transverse seal 69, made after the last transverse seal 63d of the number of transverse seals. The transverse seals 68, 69 also extend here from the second longitudinal edge 67 up to a distance

from the first longitudinal edge 66. The row of transverse perforation 64a extend up to both longitudinal edges. In this way it is possible in a simple manner to manufacture a number of air cushions, in the example given five, but any other number can also be used, which air cushions can easily
5 be separated from a neighbouring series of five cushions, or another number, by the row of perforations. Moreover no means for making the transverse seals or transverse rows of perforations are necessary.

Alternatively a pre-processed tubular foil 72 can be used in which spaced
10 apart pairs of transverse seals 73a, 73b; 73c, 73d... have been made. The transverse seals extend here from the second longitudinal edge 77 up to a distance from the first longitudinal edge 76. A transverse row 74a, 74b, of perforations has been made between the transverse seals 73a, 73b, of each pair, as shown in figure 7. By using such a pre-processed
15 tubular foil 72 the device itself does not need to comprise means for making transverse seals, and no means for making transverse rows of perforations, so that the device can be designed compact and economical. As will be clear the transverse seals bound the cushion filled with a medium, and the transverse rows of perforations can be used for
20 separating adjacent cushions from each other.

Alternatively the device according to the invention can further be provided with means for making a transverse seal in the pre-processed foil, and/or be provided with perforation means for making a transverse row of per-
25 forations, when another kind of pre-processed foil is taken as starting point.

The device according to the invention works as follow. First the beginning of the pre-processed foil is manually fed into the device. A first cut is made
30 manually, or a cut is made by the cutting means, which cut is used for inserting the tube into the pre-processed tubular foil. Subsequently the device can operate in a mechanized manner, the medium each time being

introduced via the tube, after which the longitudinal seal is made by the sealing means in order to enclose the introduced medium. Here the tube also ensures a positioning and a guidance of the pre-processed tubular foil.

5 In figure 3 a cross-section of a cushion according to the present invention is schematically shown. The cushion 15 filled with a medium has a second closed off longitudinal edge 18, and a first cut-through longitudinal edge 19 formed by two ends 16, 17 situated opposite it, and a longitudinal seal 20 situated between the first 19 and the second 18 longitudinal edge. The medium is situated here between the second longitudinal edge 18 and the longitudinal seal 20.

In figure 4 a series 40 of cushions 41a, 41b ... manufactured by a device according to the invention is shown in perspective view. Seen in cross-section each cushion 41a, 41b, has a second closed off longitudinal edge 42, and a first cut-through longitudinal edge 43 formed by two ends 44, 45 situated opposite it, and a longitudinal seal 46 situated between the first 43 and the second 42 longitudinal edge. Possibly the portion between the longitudinal seal 46 and the first longitudinal edge could be provided with prints for advertising or other (product) information, respectively. Alternatively the sealing means can be adjusted such that the portion between the longitudinal seal and the first longitudinal edge is cut from the rest of the pre-processed foil during sealing.

25 Adjacent cushions 41a, 41b, ... of a series 40 of cushions can be separated one from the other by one or more transverse seals 48a, ..., and/or be separated one from the other by a row of transverse perforations 49a,.....

30 The alternative embodiment 100 of a device for manufacturing air or gas-filled cushions is shown in figures 8A and further. The device 100 comprises a frame 300 onto which a shaft 101/173 has been mounted for

support of a roll 102 of tubular foil 200. The tubular foil corresponds to the one of figure 6, as can be seen in detail 9D, having transverse seals 162, 163 and in between them perforation 164. In operation the tubular foil 200 will be pulled from the roll 102 in the direction 5, in order to turn it into gas-filled bags 201, 202.

As can be seen in the figures 9A and 9B the shaft 101 comprises a rod 173, which at both ends is provided with cones 171, 172. The cone 172 can be removed in order to place a new roll 102. The rod 173 is bearing mounted in bearing block 170. The end of the bar shaft 173 extending outside the bearing block 170 is covered with a silicon strip, on which a stationary element that is not shown engages to slow the bar axis 173 down, so that the portion of the tubular foil 200 extending between the roller 102 and the sealing portion, cannot slacken.

In figure 8B the location of a prox-sensor 140 and a counting wheel 141 is indicated.

For the filling with air a tube 109 extends along the first longitudinal edge 106 of the tubular foil 200, which tube is buckled, having a portion 152 extending parallel to the longitudinal seam 161 yet to be made, and a portion 151 situated ahead of it, which is at an angle α of 4 to 5° to it. As can be seen in the figures 9A and 9B the shaft 173 is perpendicular to the tube portion 151.

The tube portion 151 has a rounded off front edge in order to facilitate movement past it of the first longitudinal edge 106. The second portion 152 has an air discharge opening 110 facing the second longitudinal edge 107. Air is supplied to the tube 109 via a connection tube 182 and air pump 183.

Shortly downstream of the air supply opening 110 a blade 108 is situated,

which is stationary, and serves to cut open the first longitudinal edge 106. Adjacent to the blade 108, on the other side of the air supply tube 109, the engagement by the sealing means that will be discussed below, starts.

5 Considered in transverse direction, the sealing station is placed immediately adjacent to the air supply tube 109. Sealing takes place with the help of a sealing wire 139, clearly to be seen in the figures 8A and 8B, as well as figure 10, which is suspended in seal unit 138, which with the help of compression springs 132 is suspended from attachment block 133, that is
10 fixed with the frame 300. At the lower side a contra block 135 is situated, which is also fixed with the frame 300. Between sealing wire 139 and the tubular foil 200 a teflon tape 111 is situated, which runs about runners 130, 130a, the latter being biased to the outside by means of a compression spring 134 to keep the teflon tape 111 tensioned. As can be seen in
15 figure 10 a protective hood 190 shields the sealing area towards the cushions.

In a similar way a teflon tape 112 runs about runners 131 and 131a, in which runner 131a is biased to the outside again by means of
20 compression spring 134 to keep the teflon tape 112 tensioned. The teflon tape 112 runs on the contra block 135 supported by a strip of soft material, for instance a foam material 137 to level the pressure.

The foil material is thus situated between two teflon tapes 111, 112 which
25 run along with the tubular foil. As a result unwanted melting to machine parts is prevented, and a perfectly closed longitudinal seal 161 is realised in a continuous manner. The longitudinal seal 161 is realised in the area immediately following the blade 108, so that in fact a sealing at the first longitudinal edge 106 is kept intact, in which however the air supply tube
30 109 extends through it, substantially in longitudinal direction.

Immediately downstream of the sealing station drive rollers 103 and 104

are positioned underneath and above the tubular foil 200, which drive rollers are driven by motor reduction gear unit 118, via coupling 184, toothed wheel pair 185, and driving blocks 187, 188, in between which a compression spring 186 has been placed. Driving block 188 is fixed with the frame 300 and driving block 187 is clamped against block 188 for letting the wheels 103, 104 exert a clamping force on the foil. The driving blocks 187, 188 drive the drive wheels 103, 104. In turn these wheels drive the tubular foil 200. In figures 9A and 11 it can be seen that the drive wheels 103, 104, considered in width direction, only engage a little part of the tubular foil 200, just next to the air supply tube 109.

During transport of the tubular foil 200 and during discharge of the air/gas from the opening 110 the first longitudinal edge 106 will be pulled taut about the portions 151, 152 of the tube 109. More towards the other longitudinal edge 107 there will be a material surplus, as a result of which pleats 165 (see figure 9A) will arise. As a result it is achieved that not only the filling of the cushions 201, 202, bounded by transverse seal sets 160 is accelerated, but also that a taut and perfectly closed longitudinal seal 161 is realised. As can be seen cushion 201 is still filled, while the longitudinal seal 161 for said cushion is still being made. When the seal 161 is ready, the cushion 201 is filled completely. The cushions 202 are horizontally supported by support plane 180. The ventilating fan 150 cools off the longitudinal seal 161.

Claims

1. Device for manufacturing cushions filled with a medium from synthetic pre-processed tubular foil, to which device flexible pre-processed tubular foil is supplied in a supply direction, in which the flexible pre-processed tubular foil is supplied in flat condition, in which the pre-processes tubular foil has a first and a second longitudinal edge opposite each other, said device being provided with introduction means for introducing a medium, with cutting means for making a cut in the pre-processed tubular foil only and at least near the first longitudinal edge of the foil, the introduction means being elongated and insertable in the pre-processed tubular foil through the cut made by the cutting means for abutment of the introduction means against the part of the first longitudinal edge that is not yet cut, and with sealing means for sealing the pre-processed tubular foil in longitudinal direction and between the introduction means and the second longitudinal edge for sealing off the cut made by the cutting means.
2. Device according to claim 1, in which the introduction means is formed by a tube having an opening, for instance a slit or holes, for introducing the medium into the pre-processed tubular foil, which opening preferably faces away from the first longitudinal edge.
3. Device according to claim 2, in which a tube is positioned for extending in upstream direction, past the first longitudinal edge, within the tubular foil.
4. Device according to any one of the preceding claims, comprising means

for pulling the first longitudinal edge taut.

5 5. Device according to claim 4, in which the means for pulling the first longitudinal edge taut are adapted for setting the tubular foil at an obtuse angle in the area immediately upstream of the sealing means.

10 6. Device according to claim 5, in which the means for pulling the first longitudinal edge taut also comprise a supply roll or holder shaft for it that is positioned oblique with respect to the transport direction of the tubular foil at the location of the sealing means.

15 7. Device according to claim 3 and claim 4, 5 or 6, in which the tube is part of the means for pulling the first longitudinal edge taut and comprises two portions that are at an obtuse angle to each other.

8. Device according to claim 7, in which the obtuse angle is approximately 175 degrees.

20 9. Device according to claim 7 or 8, in which the obtuse angle in the tube is buckle-shaped.

25 10. Device according to claim 6, 7 or 8, in which the tube in a downstream portion of the obtuse angle is provided with the discharge opening(s).

11. Device according to claim 3 or 10, in which the cutting means is positioned immediately downstream of the discharge opening(s).

30 12. Device according to any one of the preceding claims, in which the cutting means is positioned at the location of the upstream end of the sealing means.

13. Device according to any one of the claims 1-11, in which the cutting means is positioned at a distance downstream of the upstream end of the sealing means.

5 14. Device according to any one of the preceding claims, in which the pre-processed tubular foil is provided with spaced apart transverse seals, each transverse seal extending from the second longitudinal edge up to a distance from the first longitudinal edge.

10 15. Device according to any one of the preceding claims, in which the pre-processed tubular foil is provided with repetitive series of a number of consecutive and spaced apart transverse seals, in which each transverse seal extends from the second longitudinal edge up to a distance from the first longitudinal edge, in which at a distance from a last transverse seal of
15 the series a triplet is situated of consecutively and spaced apart from each other a transverse seal, a row of perforations, which row extends from the first to the second longitudinal edge, and a transverse seal, the distance between a transverse seal and the row of perforations of the triplet being smaller than the distance between the neighbouring transverse seals of the
20 number of transverse seals.

16. Device according to any one of the preceding claims 1, 2, 3 or 14, in which furthermore perforation means are provided for arranging a row of perforations, which row extends transverse to the supply direction.

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17. Series of cushions filled with a medium manufactured by a device according to any one of the preceding claims from synthetic pre-processed tubular foil, in which seen in cross-section each cushion comprises:

- a second closed off longitudinal edge,
- 30 - a first cut-through longitudinal edge formed by two ends situated opposite it, and
- a longitudinal seal situated between the first and the second

longitudinal edge, the medium being situated between the longitudinal seal and the second longitudinal edge.

5 18. Series of cushions according to claim 17, in which the cushions are separated one from the other by a transverse seal.

19. Series of cushions according to claim 17 or 18, in which the cushions are separated one from the other by a row of transverse perforations.

10 20. Cushion filled with a medium manufactured by a device according to any one of the preceding claims 1-16 from synthetic pre-processed tubular foil, in which seen in cross-section each cushion comprises:

- a second closed off longitudinal edge,
- a first cut-through longitudinal edge formed by two ends situated
15 opposite it, and
- a longitudinal seal situated between the first and the second longitudinal edge, the medium being situated between the longitudinal seal and the second longitudinal edge.

20 21. Pre-processed tubular foil provided with a first and second longitudinal edge opposite each other and spaced apart transverse seals, in which each transverse seal extends from the second longitudinal edge up to a distance from the first longitudinal edge.

25 22. Pre-processed tubular foil provided with a first and a second longitudinal edge opposite each other and repetitive series of a number of consecutive and spaced apart transverse seals, in which each transverse seal extends from the second longitudinal edge up to a distance from the first longitudinal edge, in which at a distance from a last transverse seal of
30 the series a triplet is situated of consecutively and spaced apart from each other a transverse seal, a row of perforations, which row extends from the first to the second longitudinal edge, and a transverse seal, the distance

between a transverse seal and the row of perforations of the triplet being smaller than the distance between the neighbouring transverse seals of the number of transverse seals.

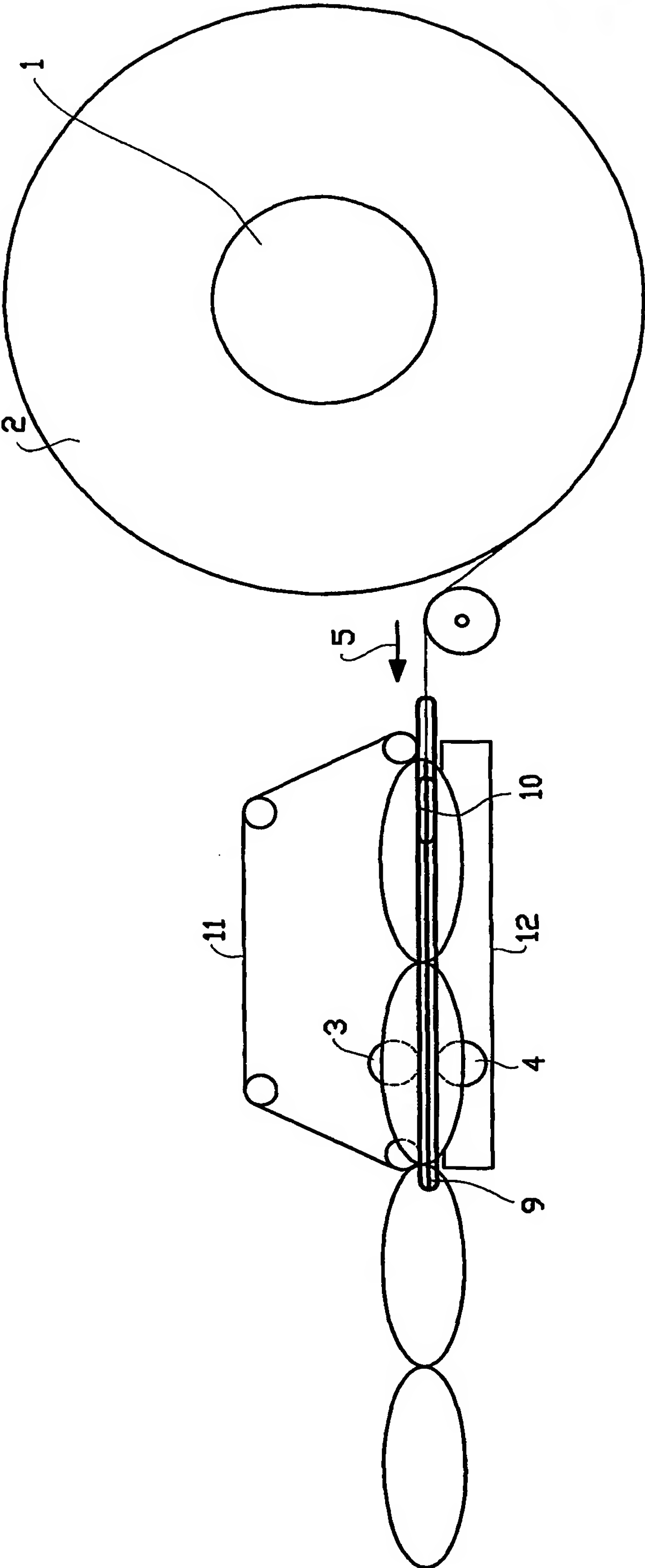


FIG. 1

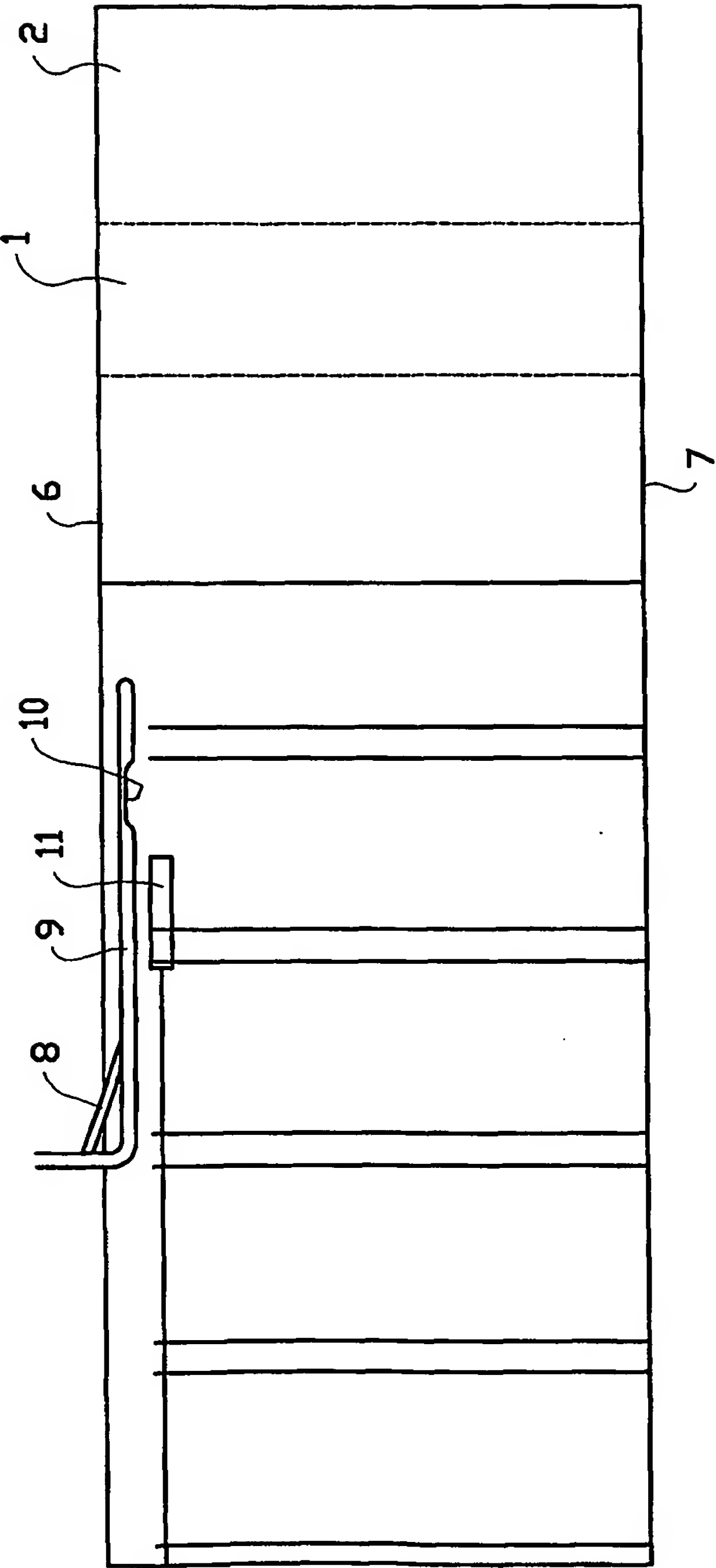


FIG. 2

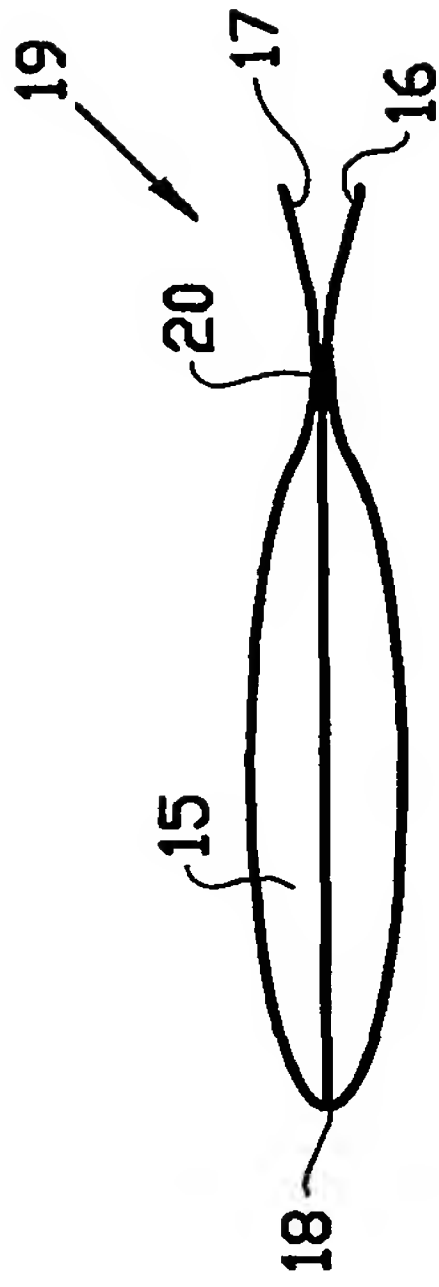


FIG. 3

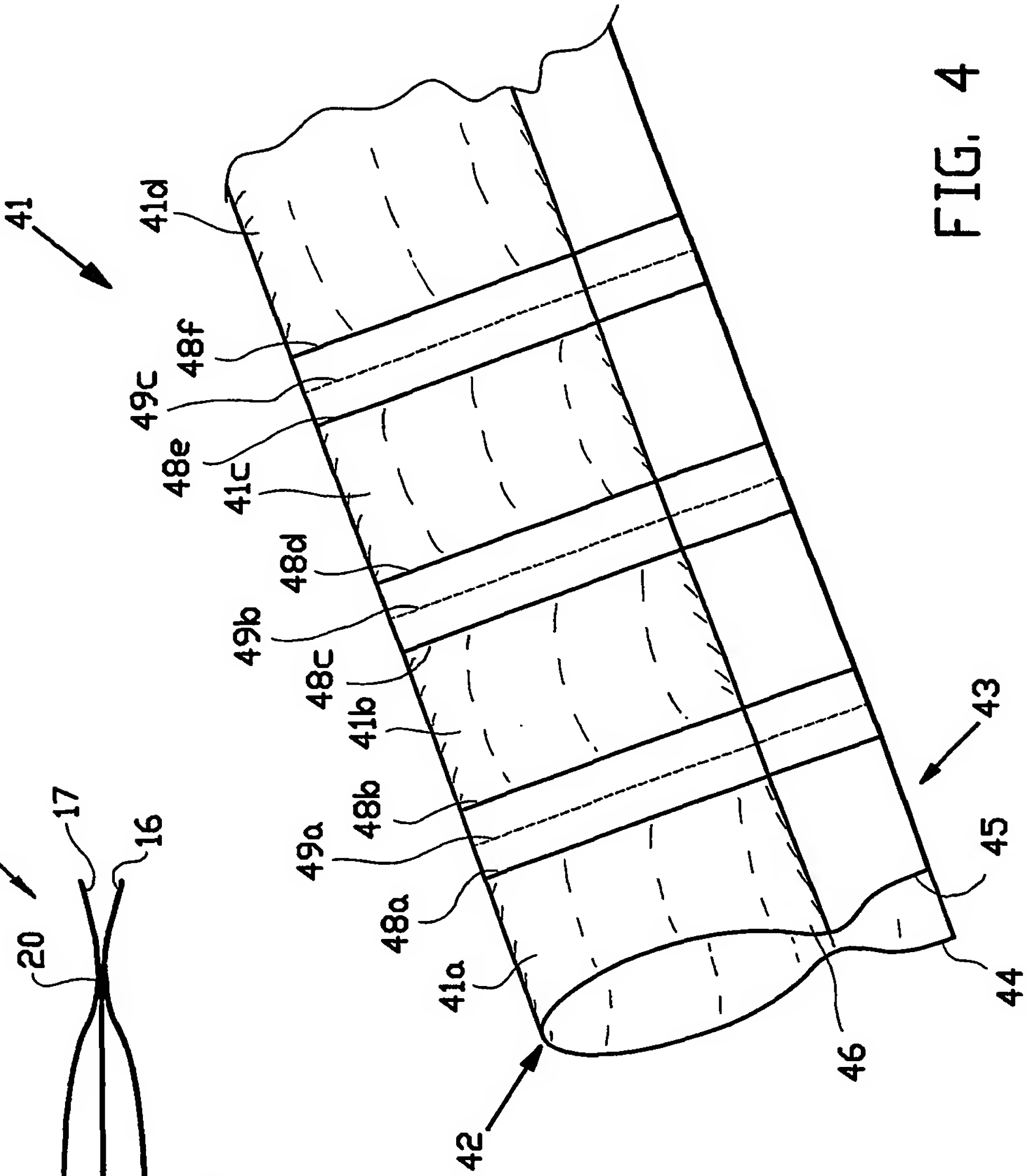


FIG. 4

FIG. 5

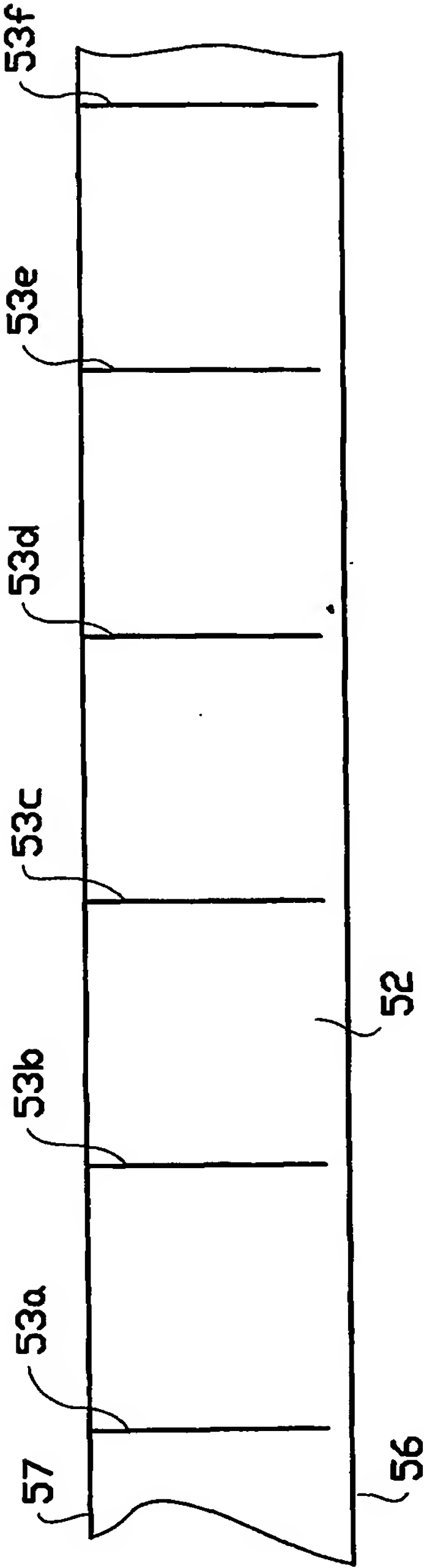


FIG. 6

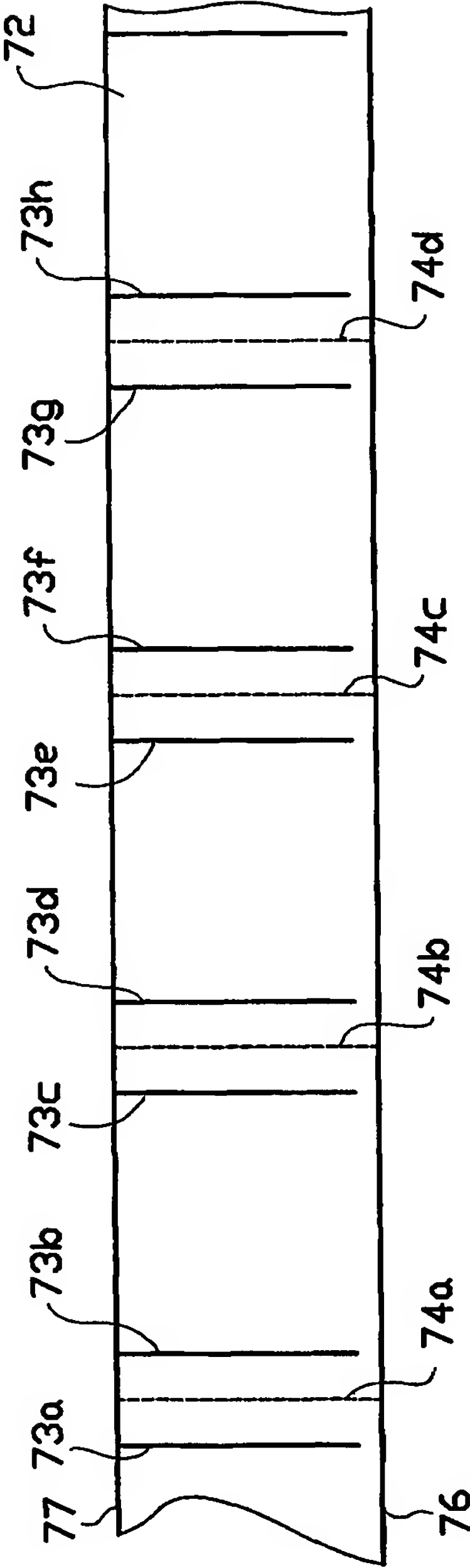
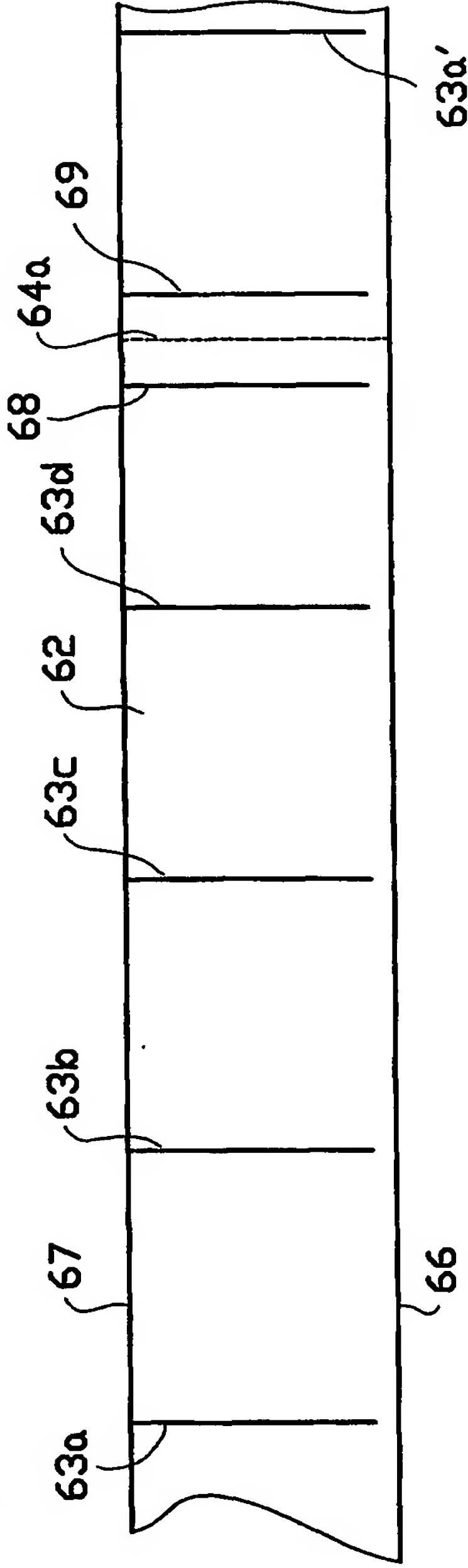


FIG. 7



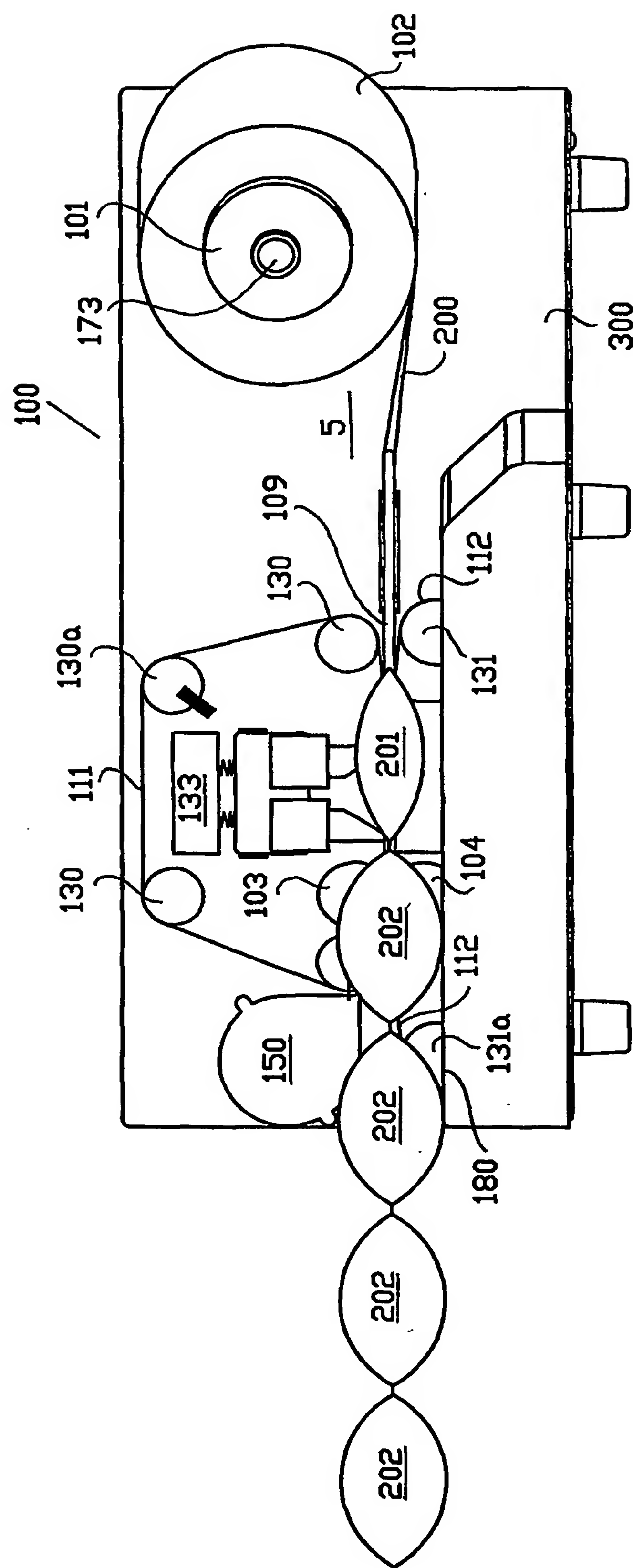


FIG. 8A

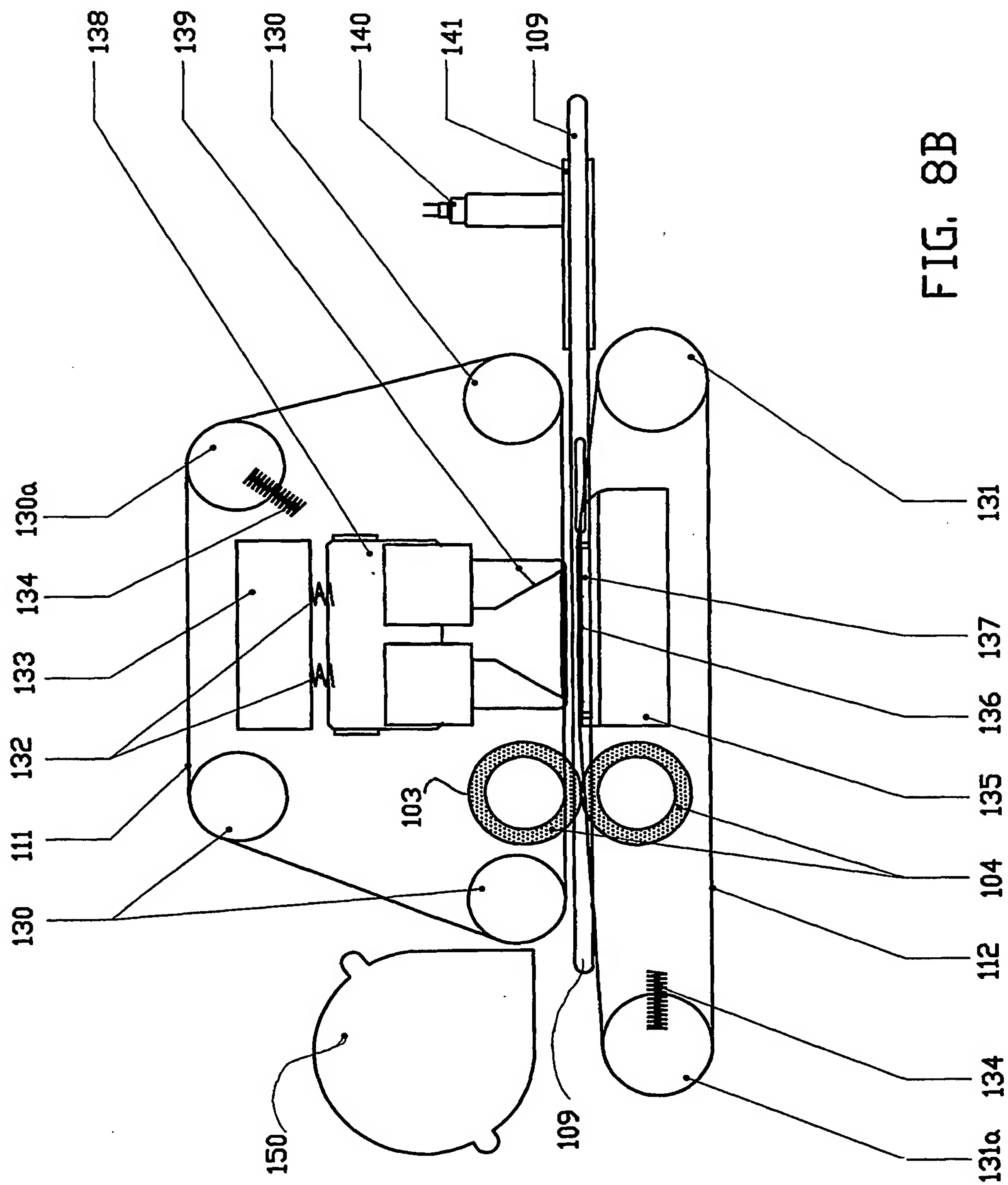


FIG. 8B

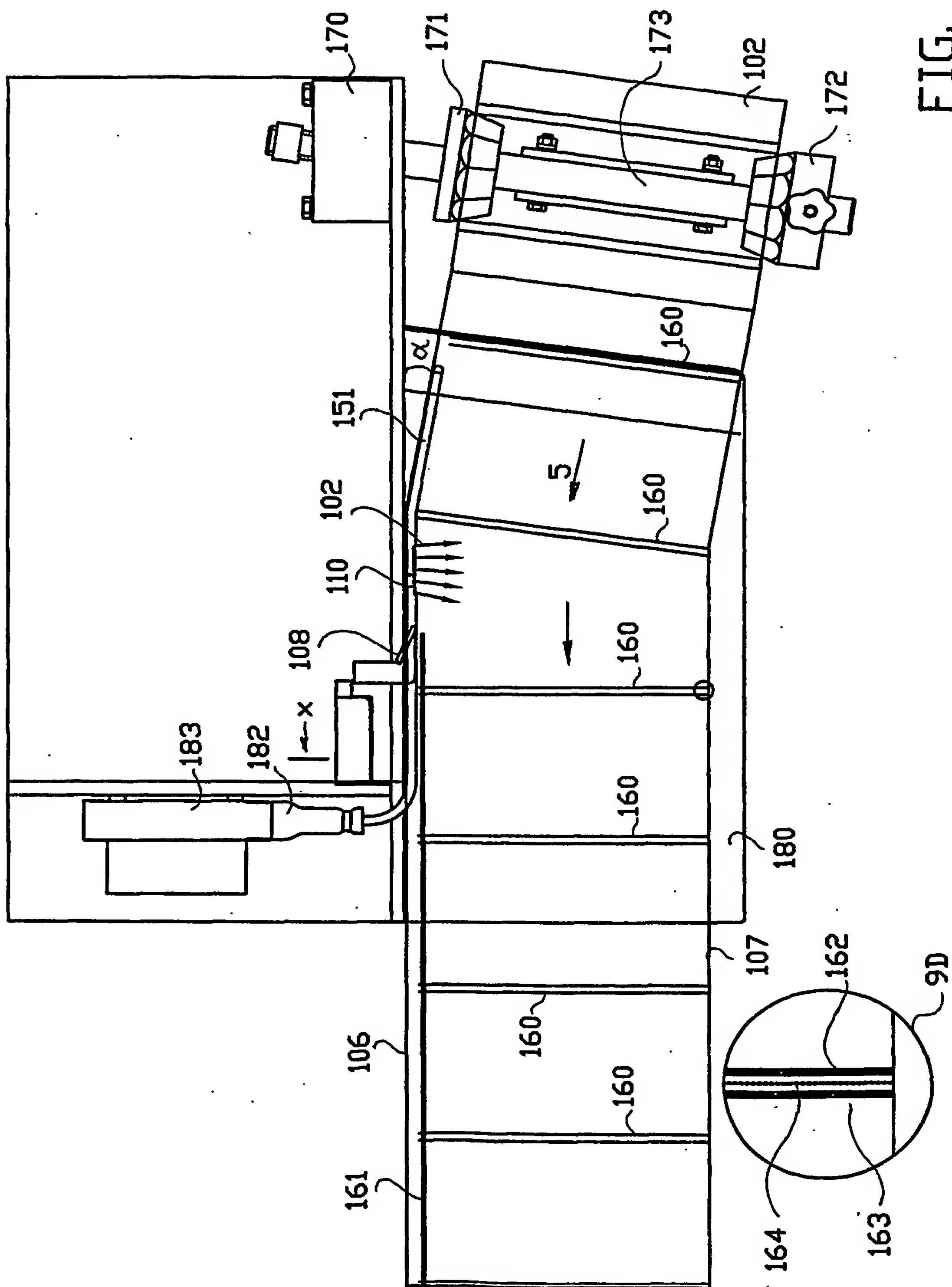


FIG. 9A

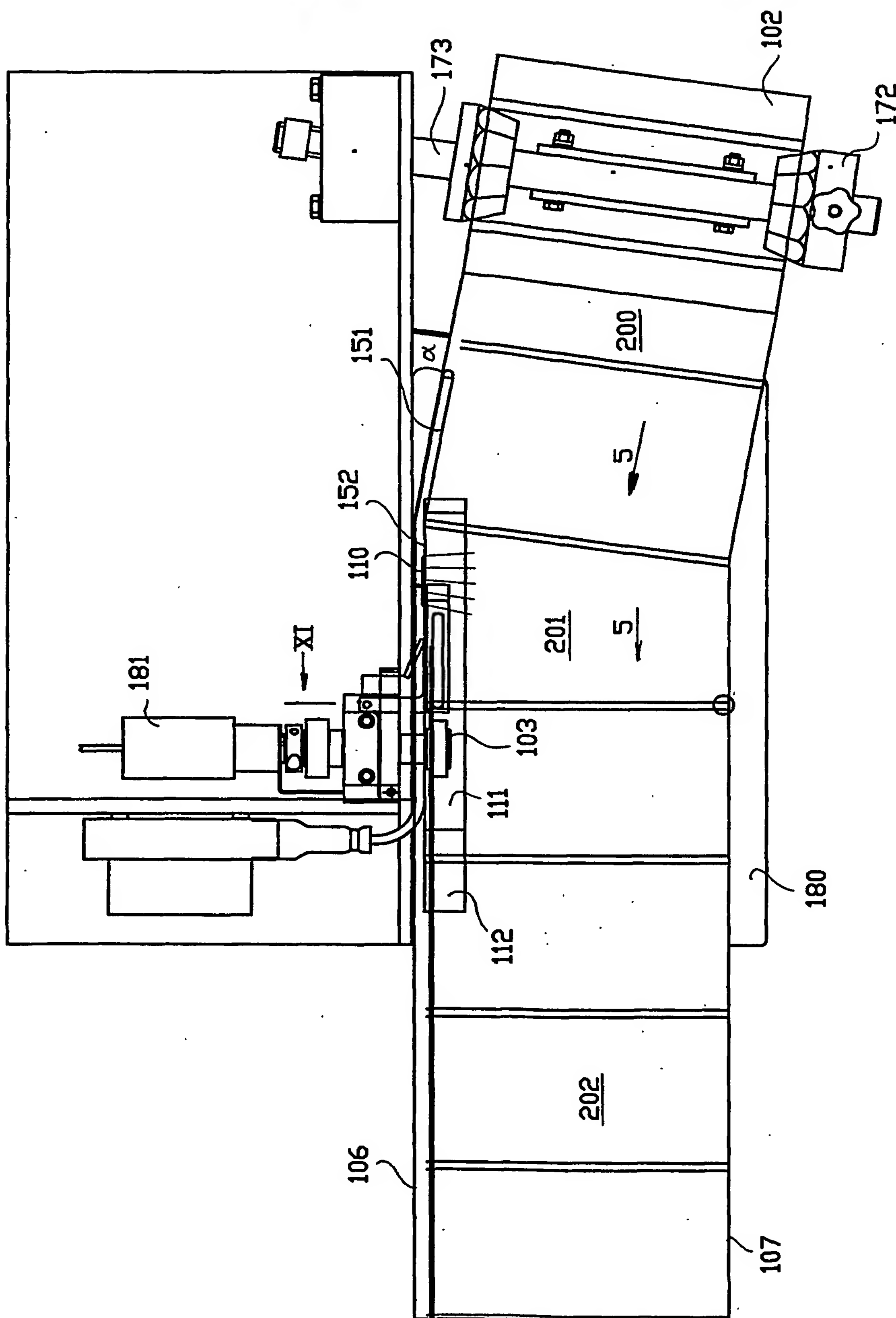


FIG. 9B

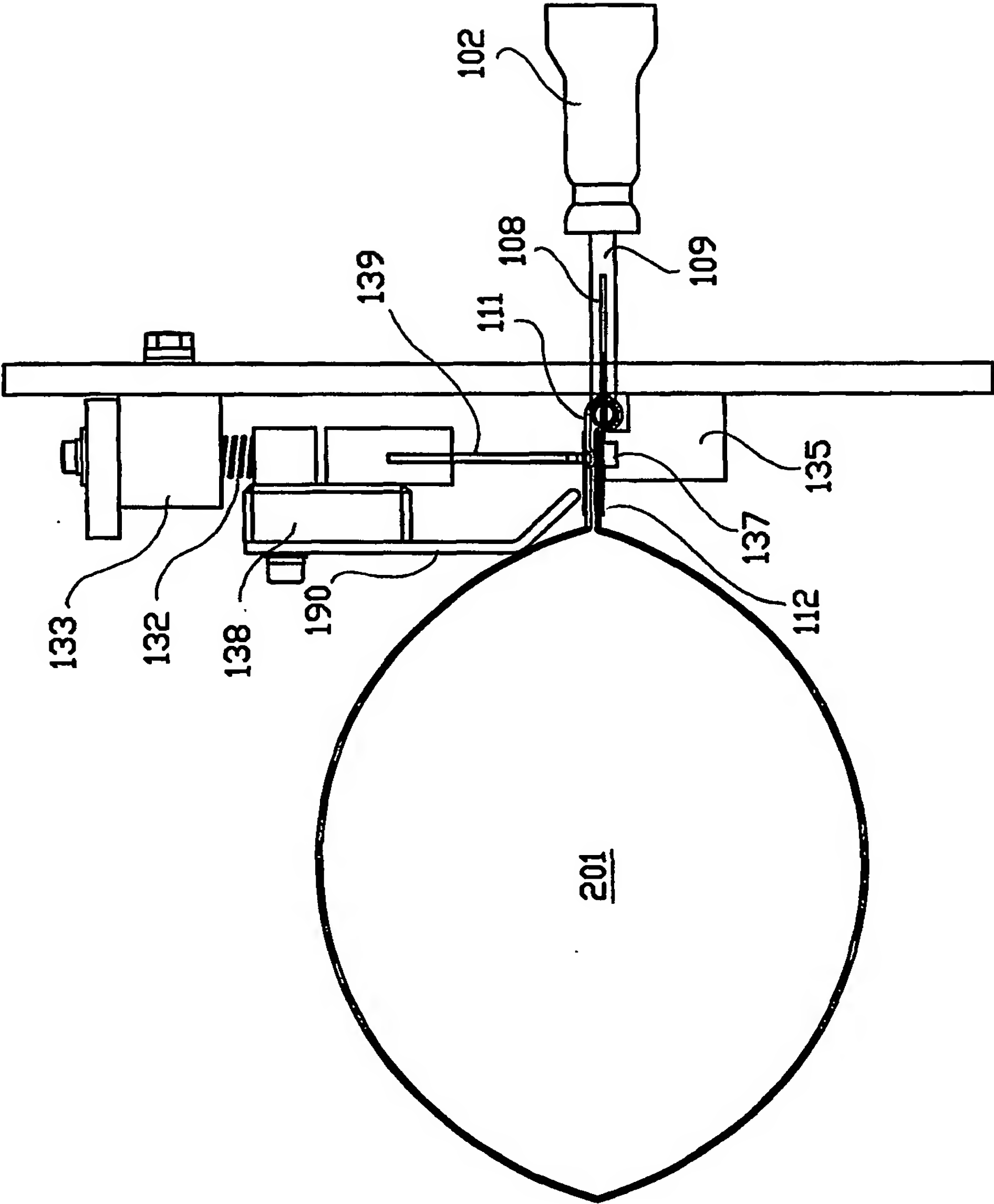


FIG. 10

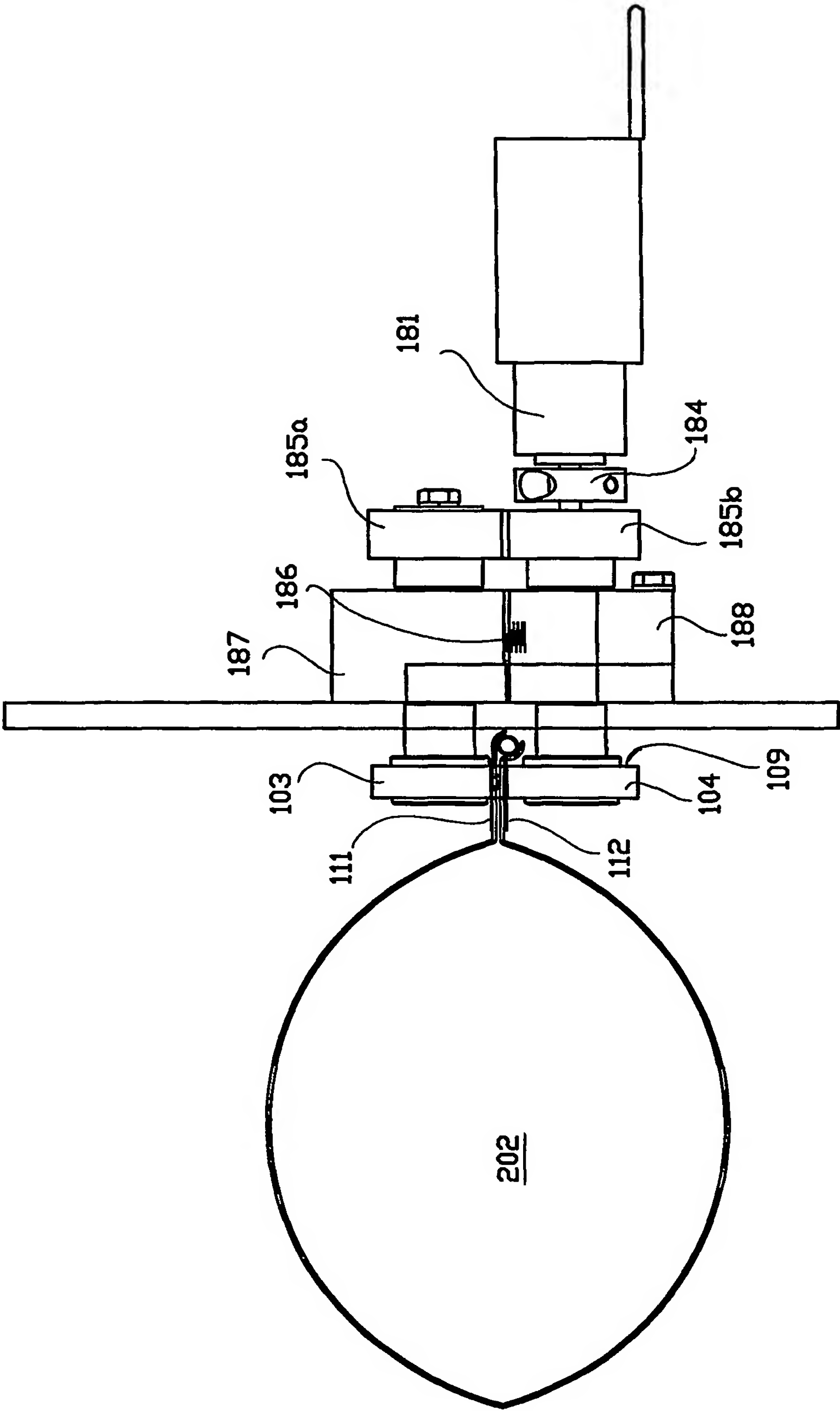


FIG. 11

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
15 November 2001 (15.11.2001)

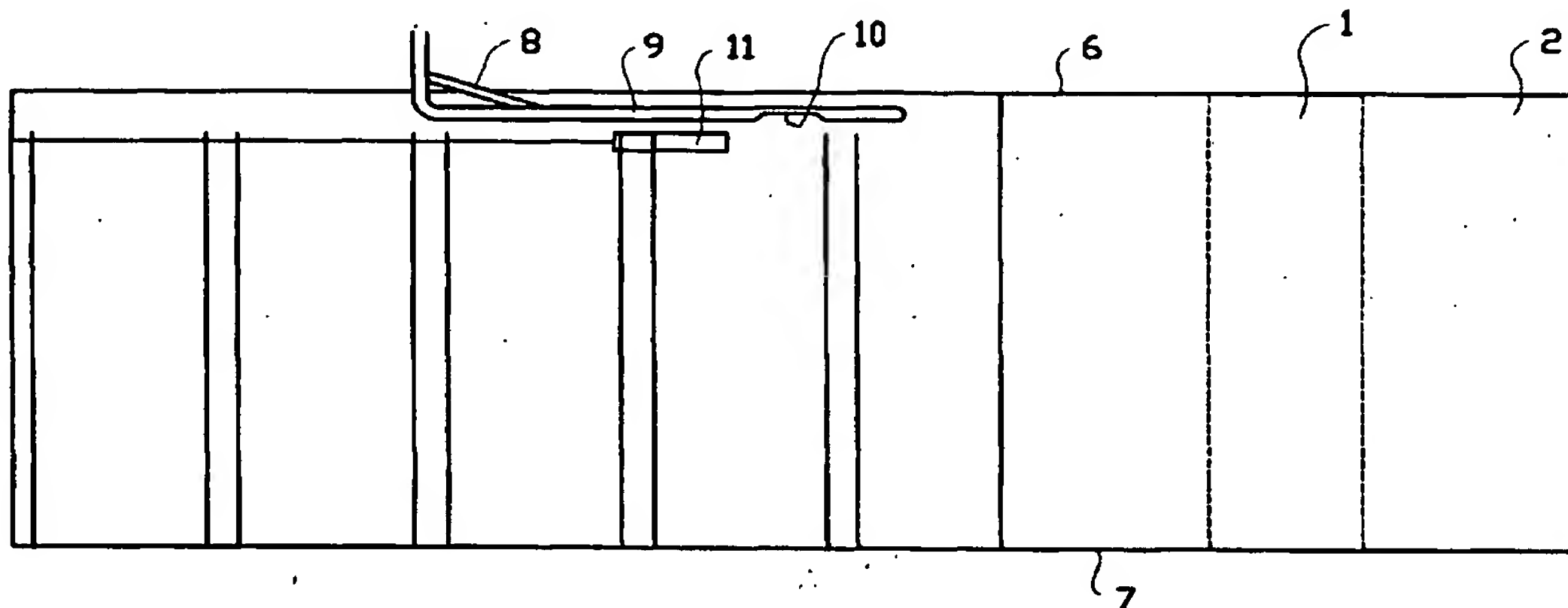
PCT

(10) International Publication Number
WO 01/085434 A3

- (51) International Patent Classification⁷: **B31D 5/00**, B65D 81/05
- (74) Agent: **DE HOOP, Eric**; Octrooibureau Vriesendorp & Gaade, P.O. Box 266, NL-2501 AW The Hague (NL).
- (21) International Application Number: PCT/NL01/00351
- (22) International Filing Date: 8 May 2001 (08.05.2001)
- (25) Filing Language: Dutch
- (26) Publication Language: English
- (30) Priority Data:
1015127 8 May 2000 (08.05.2000) NL
- (71) Applicants (*for all designated States except US*): **CASE PACKING SALES EUROPE B.V.** [NL/NL]; Industrieweg 24, NL-6039 AP Stramproy (NL). **FREE-FLOW PACKAGING INTERNATIONAL, INC.** [US/US]; 1090 Mills Way, Redwood City, CA 94063-3120 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), DE (utility model), DK (utility model), DM, DZ, EC, EE (utility model), ES, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): **AQUARIUS, Pieter, Theodorus, Joseph** [NL/NL]; Industrieweg 24, NL-6039 AP Stramproy (NL). **STRAVER, Frederik, Cornelis, Martinus** [NL/NL]; Hilversumseweg 21, NL-1251 EV Laren (NL).
- Declaration under Rule 4.17:**
— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,*

[Continued on next page]

(54) Title: DEVICE FOR MANUFACTURING CUSHIONS FILLED WITH A MEDIUM, SERIES OF CUSHIONS AND CUSHION MANUFACTURED BY SUCH A DEVICE AND TUBULAR FOIL



(57) Abstract: Device for manufacturing cushions filled with a medium from synthetic pre-processed tubular foil (2). Flexible pre-processed tubular foil is supplied to the device by a supply device in a supply direction. The pre-processed tubular foil is supplied in flat condition. The pre-processed tubular foil has a first (6) and a second (7) longitudinal edge opposite each other. An introduction means (9) for introducing a medium is provided. A cutting means (8) is present for making a cut in the pre-processed tubular foil only and at least near the first longitudinal edge of the foil. Sealings means (11) are provided for sealing the pre-processed tubular foil parallel and between the introduction means and the second longitudinal edge, for sealing off the cut. Series of cushions or a cushion filled with a medium according to the invention have a second closed off longitudinal edge, a first cut-through longitudinal edge formed by two ends situated opposite it, and a longitudinal seal situated between the first and the second longitudinal edge.

WO 01/085434 A3



KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG)

Published:

— with international search report

(88) Date of publication of the international search report:

15 August 2002

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

In Application No
PCT/NL 01/00351A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B31D5/00 B65D81/05

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B31D B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 94 07678 A (KLERK S PLASTIC IND B V ;SCHRAM HENK (NL)) 14 April 1994 (1994-04-14) cited in the application abstract -----	1-16

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

23 August 2001

Date of mailing of the international search report

22 02. 2002

Name and mailing address of the ISA
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NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

ROBERTS, P

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NL 01/00351

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-16

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-16

Inrichting voor het vervaardigen van met een medium gevulde kussens met een snij-orgaan

2. Claims: 17-20

Gevulde kussen met twee uiteinden

3. Claims: 21,22

Buisfolie met dwarslas die zich uitstrekt van eende tweede langsrand tot op afstand van de eerste langsrand

INTERNATIONAL SEARCH REPORT

Information on patent family members

Information on patent family members

International Application No

PCT/NL 01/00351

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9407678 A	14-04-1994	NL 9201713 A	02-05-1994

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 163345	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/NL 01/ 00351	International filing date (day/month/year) 08/05/2001	(Earliest) Priority Date (day/month/year) 08/05/2000
Applicant CASE PACKING SALES EUROPE B.V.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 05 sheets.
☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☒ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 2

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/NL 01/ 00351

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

Device for manufacturing cushions filled with a medium from synthetic pre-processed tubular foil(2). Flexible pre-processed tubular foil is supplied to the device by a supply device in a supply direction. The pre-processed tubular foil is supplied in flat condition. The pre-processe tubular foil has a first(6)and a second(7)longitudinal edge opposite each other. An introduction means(9) for introducing a medium is provided. A cutting means(8)is present for making a cut in the pre-processed tubular foil only and at least near the first longitudinal edge of the foil. Sealing means(11) are provided for sealing the pre-processed tubular foil parallel and between the introduction means and the second longitudinal edge, for sealing off the cut. Series of cushions or a cushion filled with a medium according to the invention have a second closed off longitudinal edge, a first cut-through longitudinal edge formed by two ends situated opposite it, and a longitudinal seal situated between the first and the second longitudinal edge.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 01/00351

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B31D5/00 B65D81/05

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B31D B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 94 07678 A (KLERK S PLASTIC IND B V ;SCHRAM HENK (NL)) 14 April 1994 (1994-04-14) cited in the application abstract -----	1-16

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

23 August 2001

Date of mailing of the international search report

22.02.2002

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

ROBERTS, P

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NL 01/00351

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-16

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-16

Inrichting voor het vervaardigen van met een medium gevulde kussens met een snij-orgaan

2. Claims: 17-20

Gevulde kussen met twee uiteinden

3. Claims: 21,22

Buisfolie met dwarslas die zich uitstrekt van eende tweede langsrand tot op afstand van de eerste langsrand

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/NL 01/00351

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9407678 A	14-04-1994	NL 9201713 A	02-05-1994

7. JAN. 2002 16:44

VRIESENDORP&GADE +31 70 3615957

NO. 7303 P. 31

PATENT COOPERATION TREATY

ONTVANGEN

- 7 DEC. 2001

PCT BEANTWOORD

From the INTERNATIONAL SEARCHING AUTHORITY

To:
Octrooibureau Vriesendorp & Gaade
Attn. De Hoop, Eric
Postbus 266
Dr. Kuiperstraat 6
2501 AW Den Haag
NETHERLANDS

INVITATION TO PAY ADDITIONAL FEES

(PCT Article 17(3)(a) and Rule 40.1)

Date of mailing (day/month/year)	06/12/2001
Applicant's or agent's file reference 163345	PAYMENT DUE within 30 xxxx days from the above date of mailing
International application No. PCT/NL 01/ 00351	International filing date (day/month/year) 08/05/2001
Applicant CASE PACKING SALES EUROPE B.V.	

1. This International Searching Authority

- (i) considers that there are 3 (number of) inventions claimed in the International application covered by the claims indicated ~~xxxx~~ on the extra sheet:

and it considers that the international application does not comply with the requirements of unity of invention (Rules 13.1, 13.2 and 13.3) for the reasons indicated ~~xxxx~~ on the extra sheet:

- (ii) ☒ has carried out a partial international search (see Annex) ☐ will establish the international search report on those parts of the international application which relate to the invention first mentioned in claims Nos.:
1-16

- (iii) will establish the international search report on the other parts of the international application only if, and to the extent to which, additional fees are paid

2. The applicant is hereby invited, within the time limit indicated above, to pay the amount indicated below:

NLG 2.082,51 x 2 = NLG 4.165,02
Fee per additional invention number of additional inventions total amount of additional fees

Or, EUR 945,00 x 2 = EUR 1.890,00

The applicant is informed that, according to Rule 40.2(c), the payment of any additional fee may be made under protest, i.e., a reasoned statement to the effect that the international application complies with the requirement of unity of invention or that the amount of the required additional fee is excessive.

3. ☐ Claim(s) Nos. _____ have been found to be unsearchable under Article 17(2)(b) because of defects under Article 17(2)(a) and therefore have not been included with any invention.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Irene Sardjoe

7. JAN. 2002 16:44

VRIESENDORP&GADE +31 70 3615957

NO. 7303 P. 32

FORM PCT/ISA/206
COMMUNICATION RELATING TO THE RESULTS
OF THE PARTIAL INTERNATIONAL SEARCHInternational Application No
PCT/NL 01/00351

1. The present communication is an Annex to the invitation to pay additional fees (Form PCT/ISA/206). It shows the results of the international search established on the parts of the international application which relate to the invention first mentioned in claims Nos.:

1-16

2. This communication is not the international search report which will be established according to Article 18 and Rule 43.

3. If the applicant does not pay any additional search fees, the information appearing in this communication will be considered as the result of the international search and will be included as such in the international search report.

4. If the applicant pays additional fees, the international search report will contain both the information appearing in this communication and the results of the international search on other parts of the international application for which such fees will have been paid.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
------------	--	-----------------------

A	WO 94 07678 A (KLERK S PLASTIC IND B V ;SCHRAM HENK (NL)) 14 April 1994 (1994-04-14) cited in the application abstract	1-16
---	--	------

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

- *G* document member of the same patent family

INVITATION TO PAY ADDITIONAL FEES

International application No.

PCT/NL 01/00351

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-16

Inrichting voor het vervaardigen van met een medium gevulde kussens met een snij-orgaan

2. Claims: 17-20

Gevulde kussens met twee uiteinden

3. Claims: 21,22

Buisfolie met dwarslas die zich uitstrekt van eende tweede langstrand tot op afstand van de eerste langstrand

De uitvinding betreft een inrichting voor het vervaardigen van met een medium gevulde kussens. Inrichtingen behoren uitsluitend te worden gedefinieerd door hun technische kenmerken. Kenmerken van de m.b.v. deze inrichtingen te vervaardigen of te verwerken materialen c.q. produkten kunnen de inrichtingen zodanig niet definiëren of beperken. Uitgaande van de stand der techniek (WO-A-9407678) wordt de inrichtingen gedefinieerd door de volgende speciale technische kenmerken:

Conclusie 1:

- een snij-orgaan

en voor de andere conclusies

Conclusie 17,20

- gevulde kussens met
- een tweede gesloten langstrand
- een daartegenover gelegen eerste doorgesneden langstrand gevormd door twee uiteinden
- een tussen de eerste en tweede langstrandgelegen langslas

Conclusie 21,22

- Buisfolie voorzien van
- een eerste en tweede tegenover elkaar dwarslassen
- waarbij elke dwars las zich uitstrekt van de tweede langstrand tot op afstand van eerste langstrand-

Aan de respektievelijke combinaties van speciale technische kenmerken (stk's) van de conclusies liggen verschillende problemen te grond:

- positionering van de voorbereekte materialen (bv. blad 9)
- voorziening van produkt informatie (bv. blad 11)
- vermindering van seal-organen bij verdere bewerking

Op basis van de beschrijving functioneren de stk's ook op verschillende wijzen.

7. JAN. 2002 16:45

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NO. 7303 P. 34

INVITATION TO PAY ADDITIONAL FEES

International application No.

PCT/NL 01/00351

Als gevolg hiervan schijnt een technische relatie tussen de conclusies 1, 17 en 20, 21 en 22 niet aanwezig te zijn. Derhalve voldoet de huidige aanvraag niet aan de voorbehouden van Art 13 (1) Regel 13.1 en 13.2 PCT.

7. JAN. 2002 16:45

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NO. 7303 P. 35

Student Family Annex

Information on patent family members

International Application No

PCT/NL 01/00351

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9407678	A	14-04-1994	NL 9201713 A	02-05-1994

✱

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7. JAN. 2002 16:44

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NO. 7303 P. 31

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:

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Postbus 266
Dr. Kuiperstraat 6
2501 AW Den Haag
NETHERLANDS

INVITATION TO PAY ADDITIONAL FEES

(PCT Article 17(3)(a) and Rule 40.1)

ONTVANGEN
- 7 DEC. 2001
PCTBEANTWOORD

Date of mailing
(day/month/year)

06/12/2001

Applicant's or agent's file reference

163345

PAYMENT DUE

within 30 ~~xxxx~~ days
from the above date of mailing

International application No.

PCT/NL 01/ 00351

International filing date
(day/month/year)

08/05/2001

Applicant

CASE PACKING SALES EUROPE B.V.

1. This International Searching Authority

- (i) considers that there are 3 (number of) inventions claimed in the International application covered by the claims indicated ~~below~~ on the extra sheet:

and it considers that the international application does not comply with the requirements of unity of invention (Rules 13.1, 13.2 and 13.3) for the reasons indicated ~~below~~ on the extra sheet:

- (ii) ☒ has carried out a partial international search (see Annex) ☐ will establish the international search report on those parts of the international application which relate to the invention first mentioned in claims Nos.:
1-16

- (iii) will establish the international search report on the other parts of the international application only if, and to the extent to which, additional fees are paid

2. The applicant is hereby invited, within the time limit indicated above, to pay the amount indicated below:

NLG 2.082,51 x 2
Fee per additional invention number of additional inventions

NLG 4.165,02
total amount of additional fees

Or, EUR 945,00 x 2 = EUR 1.890,00

The applicant is informed that, according to Rule 40.2(c), the payment of any additional fee may be made under protest, i.e., a reasoned statement to the effect that the international application complies with the requirement of unity of invention or that the amount of the required additional fee is excessive.

3. ☐ Claim(s) Nos. _____ have been found to be unsearchable under Article 17(2)(b) because of defects under Article 17(2)(a) and therefore have not been included with any invention.

Name and mailing address of the International Searching Authority



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